

DELTA-SIGMA MODULATOR FOR REDUCING QUANTIZATION NOISE AND OVERSAMPLING RATIO (OSR)

5

ABSTRACT OF THE DISCLOSURE

A Delta-Sigma modulator that allows for a reduction in the oversampling ratio (OSR) of a radio frequency (RF) Analog to Digital Converter. The modulator comprises a 1-bit quantizer, a N-bit quantizer and a digital quantization error correction circuit that corrects a for quantization error by using digital output signals from the 1-bit quantizer and from the N-bit quantizer, and reduces the quantization noise when the modulator transforms an analog input signal into the digital output signal. The quantization noise is reduced by ditigally correcting quantization errors, which affect the signal-to-noise ration (SNR) characteristic, using digital output signals of the multi-bit quantizer and the 1-bit quantizer. Also, a DC offset which may be generated by the multi-bit quantizer can be digitally removed.